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JULY 1, 1950

TECHNOLOGY DEPT.

SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE

Germ-Free World

See Page 3

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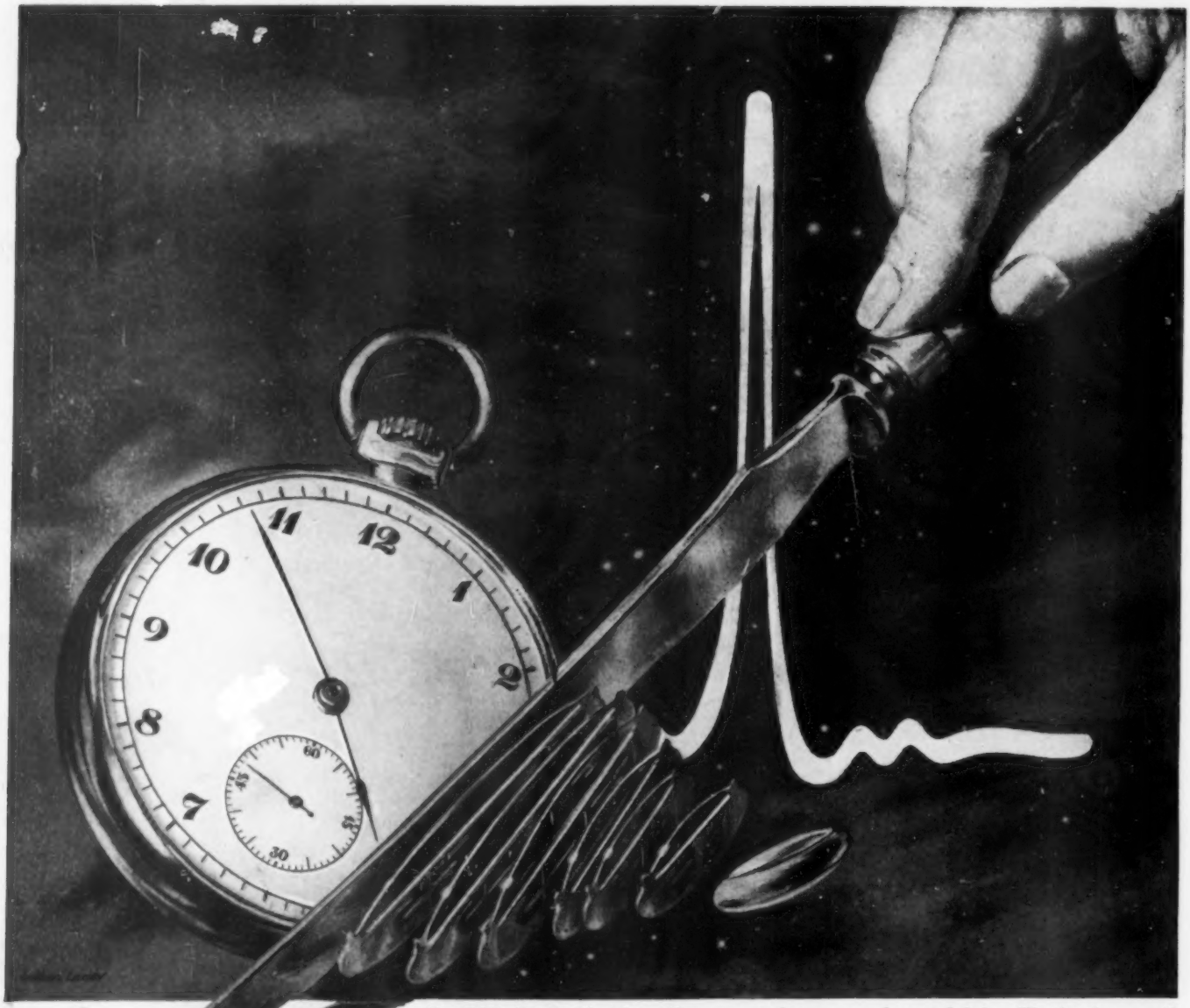

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GERIATRICS

Germ-free Life Is Longer

How long life can last when not subjected to the devitalizing fight against germs will be studied in the "germ-free" laboratories at Notre Dame.

See Front Cover

➤ HOW long will life last and death be postponed through freeing the living body of its constant battle against germs? That is the next great investigation to be tackled by Dr. James A. Reyniers, director of Notre Dame's "germ-free" laboratories in a new building just dedicated.

Already evidence has piled up, during his quarter-century of pioneering a germless environment, that aseptic animals do have unusual longevity and that freedom from infection pays off in longer vigor and tissues slower to age.

Few of the white rats, the favored animal in Notre Dame's germless microcosms, have a chance to grow really old because they are in such experimental demand. Now Dr. Reyniers hopes to dedicate enough of his precious population to allow them to die natural old-age deaths.

"It will be a great experience to see a germless rat become senile and die naturally," Dr. Reyniers stated. "We must be ready to carry on our experiments for five years although we know that most laboratory rats are old at three years."

The living cells in the rats and chickens reared in the LOBUND germ free tanks seem to remain more "juvenile" in appearance. In experiments elsewhere antibiotics fed to animals even when they are not sick have increased growth.

What is learned from germless rats may allow scientists to speculate on how to apply such discoveries to prolonging human life, not by removing all germs from our environment, but by other devices that may accomplish a similar effect.

In the latest Reyniers device for raising germless animals, a human being does live among them in a giant tank, but he is a "diver" who is clad in plastic suit and mask, showers in germ-killing liquids and plunges through an antiseptic pool to enter the aseptic world for servicing and measuring animals in several dozen cages.

The front cover of the SCIENCE NEWS LETTER shows the "diver" entering the germ-free animal colony after having passed through the antiseptic germicide trap. Air is furnished the attendant through a hose as though he were under water.

This largest germ-free apparatus so far built will be used to provide a constant supply of the animals for many experiments that the laboratories are being asked to do for government, other universities and industries.

The real effect of radiation upon the living organism, a prime question in a world threatened by the atomic bomb, will be investigated. Radiation sickness, such as occurs after exposure to X-rays and atomic radiation, seems to be promoted and accelerated by infection. The Atomic Energy Commission and the Office of Naval Research, to aid atomic defense plans, are supporting a program that will discover the effects of radiation upon animals kept away from germs.

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MEDICINE

Flicker Test for High Blood Pressure

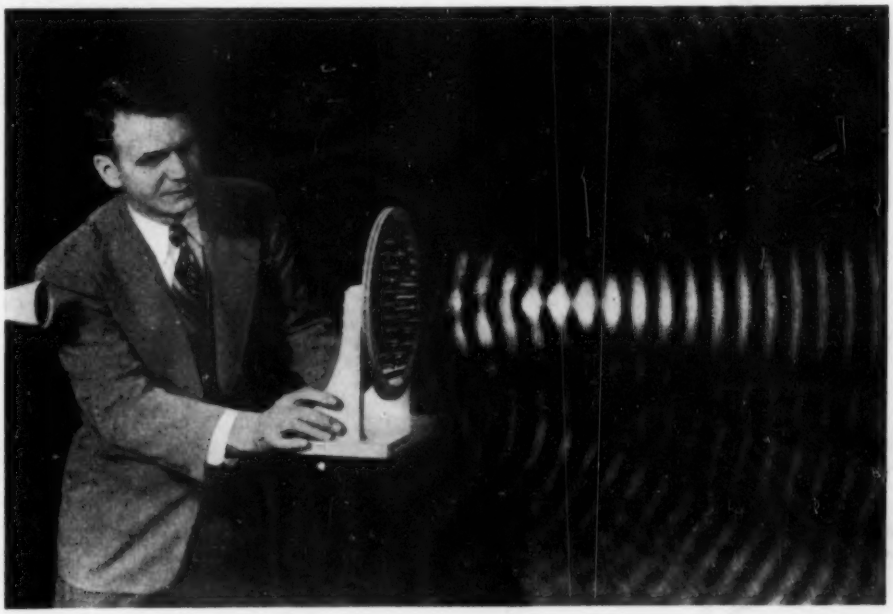
➤ A FLICKER test for diagnosing high blood pressure and some forms of heart disease, such as angina pectoris, was announced by Drs. Louis R. Krasno and A. C. Ivy of the University of Illinois College of Medicine of Chicago, Ill., in a report to the American Heart Association.

The test may even, the scientists hope, be able to detect persons who may later develop high blood pressure and coronary artery disease but who do not show symptoms detectable by any other means. Such an early diagnostic test, if successful, could mean longer and healthier lives for these persons.

The test is made with a flicker photometer, or flicker meter, specially devised for use in the physician's office. The patient sits in front of a box with a frosted glass. Behind the glass a light flickers. The speed of the flicker is controlled by the doctor, and the object of the test is to determine when the flicker is so fast that the patient sees a continuous light. This is called the flicker fusion threshold, or F. F. T. for short. For most normal persons this is when the light flashes 2,400 times a minute or 40 times a second.

Persons with high blood pressure are known to have changes in the blood vessels of the retina of the eye. These changes are probably preceded by a spasm of the tiny blood vessels. And because of the narrowing of the blood vessels, the eyes get less oxygen and presumably therefore would not see the flickering light as a continuous light at the same rate of flicker as made it seem continuous to normal persons. Their F. F. T. would be abnormal.

Nitroglycerin, one of the drugs used in angina pectoris, dilates blood vessels. If, the scientists reasoned, this and other blood vessel dilators would relieve the spasm or physiological hypertonus of the little arter-



PATTERN OF SOUND WAVES—The focusing effect of an acoustic lens on sound waves emitted from the horn at left is demonstrated by F. K. Harvey who along with W. E. Koch developed the new technique. It will provide a useful means for studying the sound wave field of telephone receivers and other communications equipment. A tiny microphone and a 110-volt neon lamp are mounted on the end of a beam which swings vertically through the wave field and at the same time is moved horizontally away from the lens. The pattern above was produced during a time exposure of about ten minutes.

ies in the eyes, and improve the oxygen supply, the flicker fusion threshold, or F. F. T., would improve. So in the test, the F. F. T. is determined without any drugs, and then after nitroglycerin has been put under the patient's tongue.

In known cases of high blood pressure and coronary heart trouble, the test has been 98% accurate, Drs. Krasno and Ivy reported in the heart association's official journal, CIRCULATION.

They believe the test should be further tried to determine its value for: 1. diagnosing heart trouble in cases where other tests give uncertain results; 2. for detecting incipient high blood pressure and coronary artery disease; 3. for determining whether a certain dose of a blood vessel dilating drug is actually entirely counteracting the blood vessel spasm condition in a patient.

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MEDICINE

Spasm Rare in Polio

➤ SPASM of skeletal muscles, often reported an important feature and a cause of pain in poliomyelitis, broken bones and backache, occurs very rarely in these conditions, it appears from research reported in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (June 17) in Chicago.

The studies, by Drs. Alex Harell and Sedgwick Mead and Miss Emily Mueller, registered physical therapist, of Washington University School of Medicine, St. Louis, involved taking records of electrical activity of muscles.

In only two out of more than 100 patients with acute polio at St. Louis City Hospital during the 1949 epidemic did the electrical activity show a condition of muscle spasm. Neither patient complained of pain, either at rest or when moved.

Spasm could be detected in "only an inconsequentially small number" of the patients with polio, low back pain and broken bones, the St. Louis scientists report. They believe that the clinical diagnosis of spasm in such conditions will be wrong in a large percentage of cases.

Spasm in skeletal muscles they define as "a reversible state of sustained, involuntary contraction, accompanied by muscular shortening and associated with electrical potential changes."

The scientists tried, on themselves, the experiment of injecting into their muscles small amounts of a salt solution. This causes a "burning, tearing pain which rises to a climax and subsides in about five minutes." Records of electrical potentials from muscles during these experiments, however, showed no signs of muscle spasm.

There seems, they conclude, to be no specific cause and effect relation between spasm and pain. They urge more thoughtful use of the term, differentiating it carefully from spasms, spasticity, tonus, contracture, cramp and rigidity.

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MEDICINE

Advances of Equipment, Funds to Fight Polio Made

➤ ADVANCES of emergency funds and emergency shipment of equipment for polio-fighting from the National Foundation for Infantile Paralysis in New York to local chapters have already begun even though the polio season is barely starting.

Almost a quarter of a million dollars has been advanced since the first of June to chapters whose March of Dimes' funds have been depleted by the demands of rising numbers of polio cases in their areas.

Emergency shipments of equipment during the week ending June 10 included: 13 respirators (iron lungs), five hot pack machines, one suction machine and 480 pounds of woolen materials used in hot packs. Largest shipments of respirators went to Texas and California.

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There are plenty of wild plants suitable for eating as *greens;* included are dandelions, watercress, stinging nettle, marsh marigold, dock, wild onion, lamb's quarters and many others.

Question Box

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GENERAL SCIENCE

Sexual "Pervert" Probe

That homosexuality is a thing of gradation and that many socially significant persons have sexually taboo items in their history are factors to be considered.

Dr. Kinsey says: "You have correctly interpreted the data which you are using from our book. Certainly there is no question that the reality of the total situation needs to be drawn to the attention of the country. Hysteria thrives best when only a small segment of the picture is understood."

➤ THE SENATE subcommittee investigating employment of "homosexuals and other moral perverts" by the Federal government had better read the Kinsey report before it goes very far.

Dr. Alfred C. Kinsey and his associates found, for instance, that 4% of the white males of the country are "exclusively homosexual throughout their lives after the onset of adolescence." (p. 651, SEXUAL BEHAVIOR IN THE HUMAN MALE, Kinsey, Pomeroy, Martin, W. B. Saunders Company.) If this figure can be applied to the 1,419,674 male Civil Service employees, it means that 56,787 Federal employees are "exclusively homosexual." If it is legitimate to apply the figure to the white male members of Congress, it would mean that 21 Senators and Representatives are "exclusively homosexual."

The committee will have to wait until the publication of Dr. Kinsey's next book to discover what percentage of the better than 400,000 female Civil Service employees is, in his term, "exclusively homosexual."

The Senate resolution authorizing the investigation does not define the terms "homosexual" and "other moral perverts" used in the resolution. Dr. Kinsey declared (p. 650) that "any question as to the number of persons in the world who are homosexual and the number who are heterosexual is unanswerable." It became necessary for him to devise a table of seven categories of gradations of sexual activities ranging from the exclusively heterosexual to the exclusively homosexual (p. 639).

The investigation is being held because some members of Congress believe that employment of "homosexuals and other moral perverts" is a security risk in that such persons might be subject to blackmail by Communists.

If that is true, the subcommittee will be interested not only in that 4% which is "exclusively homosexual," but also will have to take an interest in persons who fall into other categories in Dr. Kinsey's table of gradations.

If one homosexual contact is enough for a Communist blackmailer's purposes, then, assuming again that Dr. Kinsey's figures can be applied to Civil Service employees and members of Congress, 37% of them are poor security risks for that reason. This would work out to 525,279 male Civil Service employees and 192 white male members of Congress.

Dr. Kinsey states (p. 650) that "37% of the total male population has at least some overt homosexual experience . . . between adolescence and old age."

According to Dr. Kinsey (p. 650), 13% of the white male population falls into the three categories showing the greatest frequency of homosexual contacts. "That 13%," he states, "has more of the homosexual than the heterosexual for at least three years between the ages of 16 and 55." Again assuming that these figures are applicable, that would mean that 68 members of Congress and 184,558 Civil Service employees fall into the higher brackets.

A more thorough analysis of the educational, social and economic backgrounds of the members of Congress and Civil Service employees might result in figures which are higher or lower than those above. However, Dr. Kinsey states (p. 201), "Many of the socially and intellectually most significant persons in our histories, successful scientists, educators, physicians, clergymen, business men and persons of high positions in governmental affairs, have socially taboo items in their sexual histories and among them they have accepted nearly the whole range of so-called sexual abnormalities."

The subcommittee will also investigate "the preparedness and diligence of authorities of the District of Columbia as well as the appropriate authorities of the Federal Government, for the protection of life and property against the threat to security inherent in the employment of such perverts by such departments and agencies."

At another point in his book, Dr. Kinsey states (p. 665), "The police force and court officials who attempt to enforce the sex laws, the clergymen and business men and every other group in the city which periodically calls for enforcement of the laws—particularly the laws against sexual 'perversion'—have given a record of incidences and frequencies in the homosexual which are as high as those of the rest of the social level to which they belong."

If the experience of either the Army or the Navy during wartime is any criterion, it is highly unlikely that the subcommittee can either discover very many homosexuals in the government or devise methods of screening homosexuals by the Civil Service Commission.

According to Dr. Kinsey (p. 621), Selective Service boards and Armed Forces sources give a total figure of about 1% of our wartime military strength officially identified as "homosexual." The Kinsey figures show nearly 30% of men of the age group included in the Armed Forces as having some homosexual experience at that period in their lives.

"The most obvious explanation of the very low figures of the Armed Forces sources," Dr. Kinsey went on, "lies in the fact that both the Army and Navy had precluded the possibility of getting accurate data on these matters by announcing at the beginning of the war that they intended to exclude all persons with homosexual histories . . . Consequently few men with any common sense would admit their homosexual experience to draft boards or to psychiatrists at induction centers or in the services."

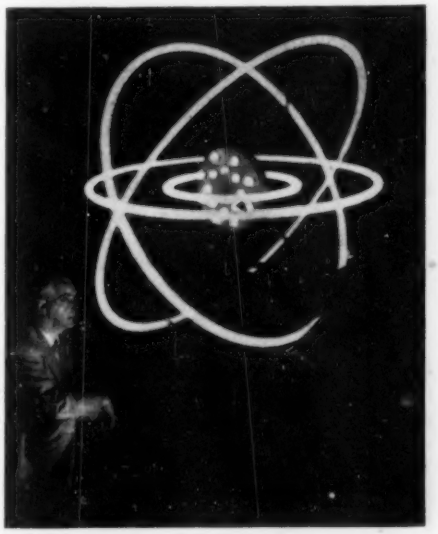
Science News Letter, July 1, 1950

MEDICINE

Cortisone Available Early in July

➤ CORTISONE, famous anti-arthritis hormone, will be available to patients in about 6,500 hospitals throughout the United States starting early in July. These hospitals are registered by the American Medical Association and meet certain requirements as to technical facilities and medical supervision.

The drug, under the trademark "Cortone," will be delivered to these hospitals



GARGANTUAN ATOM — The model atom, a feature of the Theater of the Atom, part of the 1950 Chicago State Fair, consists of eight light-bulb "electrons" that swing in circular orbits around a disk-like nucleus where protons are represented by red bulbs and neutrons by blue bulbs. Any atom in the atomic scale up to and including oxygen can be reproduced with this model.

in packages of three vials at a cost to the hospital of $28.50 per vial, Merck and Co., Inc., announce. Each vial contains 300 milligrams of Cortone. The $28.50 per vial price is equivalent to $95 per gram. When first made available to qualified clinical investigators, the price was $200 per gram.

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PUBLIC HEALTH

Housing Now Lacks Space

➤ MANY modern homes are from 20% to 50% substandard in that important factor for mental health, space, the American Public Health Association's Committee on the Hygiene of Housing finds.

"During the past half-century, our progress in home sanitation, in heating and ventilation and in improved household equipment has been revolutionary," Dr. C.-E. A. Winslow, chairman of the committee, declares. "In the same period, however, we have been retrogressing in space provisions to an almost equally phenomenal extent. Normal and happy and fruitful family life is not possible without a reasonable modicum of space."

"As one drives through the suburban areas, it is often difficult to determine which is the house and which the garage."

Minimum total floor areas adopted by the committee are: for one person, 400 square feet; for two, 750; for three, 1,000; for four 1,150; for five, 1,400; and for six, 1,550.

Reason for much of the substandard space provisions of modern housing, Dr. Winslow points out, has been "the desire to provide housing so urgently needed in a period of abnormally inflated living costs.

"This is a reason but not a valid excuse for substandard space," he declares.

On the mental health aspects of space in homes, Dr. Winslow and the committee point out that the average community must provide almost as many hospital beds for mental and nervous diseases as for all other types of diseases taken together. And, he states, the "frustration which results from overcrowding, conflict between the desires and needs of various members of the family, fatigue due to performance of household duties under unfavorable conditions—these are health menaces quite as serious as (if less obvious than) poorly heated rooms or stairs without railings.

"The sense of inferiority due to living in a substandard home is a far more serious menace to the health of our children than all the insanitary plumbing in the United States."

The committee's report is published by Public Administration Service, Chicago, under the title, "Planning the Home for Occupancy."

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PHYSICS

"Sound Bomb" Impractical

➤ SOUND waves can give mice running fits and seizures, can tear the one-celled paramecia to bits, and can cause new genetic mutations in plants as late as the third generation after exposure to the sound.

These results, reported at the meeting of the Acoustical Society of America in State College, Pa., in some ways parallel the deadly effects of atomic radiation. Fortunately there seems to be no practical way of constructing a "sound bomb" that could give out dangerous sustained vibrations.

When exposed to a high pitched whistle of about the same sound pressure as the noise inside an airliner cabin, young mice have fits or convulsions. Older mice are not affected, and there is a considerable variation in susceptibility even among young mice from the same litter, according to Dr. Hubert Frings and Mable Frings who did the research at the Pennsylvania State College.

Paramecia, which are small one-celled animals living in the water and easily visible under a microscope, are destroyed by a sound at a pitch of 1,200 cycles per second. From the study made by Eugene Ackerman of the Johnson Research Foundation of the University of Pennsylvania, it is believed that the tiny cell, with its contents and elastic covering membrane, has a natural vibration frequency at this pitch. High intensity sounds of other pitches are not nearly so effective in killing the one-celled animal.

Atomic radiation-like plant mutations were described by Prof. Raymond H. Wallace of the University of Connecticut. He said that a variation of from one to twenty-five seconds of exposure to ultrasonic radiation caused a wide variety of modifications in the seedlings of the exposed parent plants. No effects were usually found in the parents. The children and grandchildren have unusual leaf forms, flower forms, greater or lesser vigor, changed color or size. In some lines which have reached the fourth or fifth generation the original mutations have disappeared, while in some other lines modifications not present in the first or second generations have come out in the later generations.

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INVENTION

Long Patent for Device Which Prints Phone Bill

➤ ONE of the longest patents ever issued in the United States was granted recently to three Bell Telephone engineers for a device which can tabulate and print your phone bill automatically.

The bulky document covering the computer was the equivalent of a 366-page book. It included 136 sheets of drawings and 188 columns of printed specifications.

From a continuous coded tape, the new "printer" can translate long series of punched holes into printed bills, tickets, lists or pages of numerical or factual matter. It was designed as part of an overall automatic accounting machine which the inventors say completely eliminates the possibility of human error.

Patent 2,510,061 was issued to David E. Branson of River Edge, N.J., George A. Locke of Glen Head, N.Y., and Tola A. Marshall of Floral Park, N.Y. Patent rights were assigned to the Bell Telephone Laboratories, Inc., of New York.

The volume is a bargain for any one wishing to buy a copy—25 cents is the price of any patent issued by the U. S. Government.

Patent office officials said an even longer patent was issued in 1937 for a weaving loom. It contained 170 sheets of drawings and 292 columns of printed matter.

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SMOG HITS TOBACCO—The effect of smog on tobacco plants is shown above. The leaves of the exposed plant are spotted and mottled gray in color; the leaves of the plant grown in smog-free air are a healthy green. Tobacco, which is especially sensitive to smog, was one of the plants studied in the first year of basic research carried out at California Institute of Technology's Earhart Plant Research Laboratory

MEDICINE

From Now On: Antibiotics

Untouched diseases caused by viruses may be conquered by chemical treatment. Cheaper synthetic production of antibiotics, as in chloromycetin, will be achieved.

By WATSON DAVIS

Fourteenth in a series of glances forward in science.

➤ THE chemical conquest of many infectious diseases is virtually complete. The pneumonias and the venereal diseases, to take two prime examples, are no longer the killers and disablers they were before penicillin and other antibiotics were developed.

Once Pasteur had ushered in the new medical era through his revolutionary demonstration of the causative nature of microorganisms, it was a logical hope that substances to kill germs could be found.

It was not so simple as Koch and his followers had hoped when they expected to wipe out tuberculosis with chemicals as a result of having found the guilty germ. It required well over half a century before anything like a general chemotherapeutic agent was obtained.

The sulfa drugs, born of the German chemical industry and developed by British and American researchers, were the first approach to a chemical cure-all.

The first widely used drug from mold, penicillin, was so much more effective that when released for public use after the war it tended to outmode the sulfas.

Other antibiotics, as these curative substances obtained from fungi and soil organisms are called, include streptomycin, aureomycin, and chloromycetin as the ones besides penicillin that are in wide clinical use. Some are drugs of choice in treating various ills, such as streptomycin for some kinds of tuberculosis, and aureomycin for virus pneumonia. More than one antibiotic is effective against some diseases, which is fortunate when the strains of the causative germs grow resistant to one of them.

By the score substances produced by soil organisms, bacteria, yeasts, etc., are being purified and tested in dozens of laboratories in hope of finding newer and better antibiotics.

Already announced as under clinical test is neomycin, a possible running-mate for streptomycin in tuberculosis treatment. Terramycin and bacitracin are two other new antibiotics.

For the future, in this exciting and active development, you may expect:

A. Chemical methods of treating untouched diseases, such as those caused by viruses, including the troublesome common cold, influenza, infantile paralysis and encephalitis.

B. Synthetic production of some of the known antibiotics, additional to chloromycetin, so far the only one built from chemicals for commercial production. This will probably result in cheaper production and simpler standardization.

C. Discovery of effective combinations of antibiotics, possibly with the aid of other chemicals, for the better treatment of various ills.

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MEDICINE

Blood Disorders from Antihistamine Drugs

➤ THREE reports of anemia and other severe blood disorders following the use of antihistamine drugs, appear in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (June 24) in Chicago, Ill.

Three cases of anemia of the kind in which the red cells are destroyed are reported by Dr. James J. Crumbley, Jr., of the Graduate School of Medicine, University of Pennsylvania. They are, so far as he can find, the first cases of anemia reported due to antihistamines. Benadryl and pyribenzamine were the drugs in these cases. They had been taken over long periods, Dr. Crumbley reports.

The other two reports, by Dr. A. W. Hilker of Eau Claire, Wis., and Drs. Harrison S. Martland, Jr., and John K. Guck of New York, are of cases of agranulocytosis, a disease in which there are too few white cells in the blood. Weakness, progressing to almost complete prostration, were symptoms in the two cases reported. Both these patients had been taking pyribenzamine.

A few other cases of this serious blood disorder from antihistamine drugs have been reported. Drs. Martland and Guck point out that the toxic effects of antihistamines are not entirely limited to such minor disturbances as drowsiness and slight stomach and intestinal upsets and nervous system disturbances.

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VETERINARY MEDICINE

Southern Cattle Disease Strikes in Michigan

➤ ANAPLASMOSIS, a long name for a tiny parasite which causes a serious malaria-like disease in cattle, is gradually spreading from the South.

A three-year-old milk cow in Michigan recently became acutely ill with the blood disease, a report to the American Veterinary Medical Association reveals. It was the first known instance of its appearance in that state, veterinarians of Michigan State College say.

Originally discovered in Southern cattle, anaplasmosis has been slowly spreading northward for several decades. Ticks, horseflies and other blood-sucking insects help to spread it. The tiny organisms of the disease invade red blood cells, producing high temperature, anemia and gallsickness.

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MEDICINE

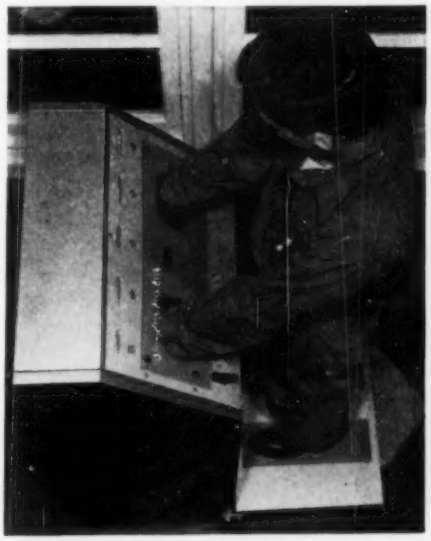
Terramycin Proving Good Mate for Aureomycin

➤ TERRAMYCIN, one of the newest germ-against-germ remedies, is proving itself a running mate to aureomycin, reports to the New York Academy of Sciences in New York have shown.

Infections in mice following irradiation, whooping cough, pneumonias, urinary tract infections, gas gangrene infections, scub typhus, Q fever, Rocky Mountain spotted fever, rickettsial pox and amebiasis are among those in which this new antibiotic was reported effective.

Results in influenza seem disappointing. The few patients in whom there has been time to try this new drug got better rapidly, but physicians are not sure how much of a part the drug played. It stops the 'flu virus in chick embryos when very large doses are used, but is not effective in mice.

Science News Letter, July 1, 1950



INSPECTION TIME—A worker is being checked for radioactivity before he enters the new radioisotope laboratory at the National Institutes of Health of the Public Health Service at Bethesda, Md. One of the few radioisotope laboratories in America equipped for medical research, it is prepared for immediate experimentation in a wide variety of fields.

MEDICINE

New Anti-Blood Clotting Drug Acts within 24 Hours

➤ GOOD results with a new drug for checking dangerous blood-clotting tendency in certain heart and blood vessel diseases were reported by Drs. Irving S. Wright, C. W. Sorenson and Grafton Burke of Cornell University Medical College, New York, at the meeting of the American Heart Association in San Francisco.

Tromexan is the name of the new drug which chemically is the ethyl ester of di-4-hydroxy-coumarinyl acetic acid.

In animal studies and trial on more than 60 patients the drug showed a faster action than the older anti-clotting drug, dicumarol. In most cases the blood showed a response within 24 hours. When the drug was stopped, its effect on the blood stopped more quickly than is the case with dicumarol.

"These are important advantages," the New York doctors pointed out, "for the treatment of acute thromboembolic conditions." This means cases in which a clot plugs a blood vessel.

Trials of the drug have also been made in Switzerland, Czechoslovakia, England and Italy.

Science News Letter, July 1, 1950

AGRICULTURE

Depth Recorders Help Locate Oyster Beds

➤ OYSTER beds can now be located through the use of depth-recording equipment, Dr. A. F. Chestnut of the Institute of Fisheries Research in Morehead City, N. C., reports.

The portable instrument sends out sound waves that are echoed back through the water from the bottom and recorded. By checking the differences in the intensities of the recordings, the kind of bottom surface was determined.

When a hard bottom rising a few feet above the surrounding mud was located, there was the oyster bed. Dr. Chestnut states that it was possible to distinguish shell bottom from hard sand, although scattered oysters lying on hard sand bottom were not easily distinguishable. He reports his findings in the journal, SCIENCE (June 16).

Science News Letter, July 1, 1950

MEDICINE

Antihistamines Might Be Good for Heart Disease

➤ THE antihistamine drugs combined with atropine might be good medicine for some kinds of heart disease and should be given a trial, Drs. Durwood J. Smith and Joseph W. Coxe of the University of Rochester School of Medicine suggested in a report to the American Heart Association in San Francisco, Calif.

Atropine is the drug dropped into eyes before examination for prescribing eyeglasses and has other medical uses.

The University of Rochester scientists base their suggestion on studies of heart arteries removed from animals and humans immediately after death and kept alive outside the body.

Two body chemicals, acetylcholine and histamine, both caused constriction of these arteries. Coronary artery constriction occurs in heart trouble. Atropine completely blocked the constricting action of acetylcholine. Antihistaminic drugs completely blocked the constricting action of histamine. Using both drugs, the scientists reasoned, should prevent any constriction of heart arteries in human patients caused by acetylcholine and histamine.

Science News Letter, July 1, 1950

MATHEMATICS-ENGINEERING

Mechanical "Brains" May Translate Languages

➤ MECHANICAL "brains" that will translate languages, create their own instructions and prove propositions in logic were seen as possible results of studies being made in Washington, D.C. on the Bureau of Standards automatic computing machine.

Known as the Standards Eastern Automatic Computer, or SEAC, the machine is the fastest now in operation. It was designed and constructed in 20 months by the Bureau of Standards under the sponsorship of the Air Force.

SEAC is an electronic automatic computer. It uses the binary system, meaning that only two digits—"o" and "l"—represent all numbers and instructions. The Air Force will use the machine to solve problems in the management and administration of large-scale enterprises.

Science News Letter, July 1, 1950

PHYSICS

New Universe: Unlimited Matter in Limited Volume

➤ A NEW kind of universe in which the amount of matter is infinite but its volume does have a limit was described in Mexico City to the American Physical Society meeting by Dr. Carlos Graef Fernandez of the National University of Mexico's Institute of Physics.

A perfectly symmetrical universe is developed by Dr. Graef in what is called a flat space-time. This arises out of Einstein's theory of special relativity as an extension to the cosmos of Birkhoff's theory of gravitation.

This attempt at a new universe picture was one of about a hundred papers presented at the first meeting of American physicists in Mexico.

Science News Letter, July 1, 1950

IN SCIENCE

MEDICINE

Total Prevention of Rheumatic Fever?

➤ THE POSSIBILITY of what might be called total prevention of rheumatic fever by penicillin was suggested in a report to the American Heart Association meeting in San Francisco, Calif.

The report was by Dr. Benedict F. Massell and associates of the House of the Good Samaritan, Boston.

The idea would be to give big doses of penicillin right away to anyone, or at least any child, who gets a strep. sore throat or other hemolytic streptococcal infection. This might save persons who had never had rheumatic fever from getting even a first attack.

Penicillin treatment of strep. infections within the first 24 hours prevented second attacks of rheumatic fever in all of 24 patients, Dr. Massell reported. Among 10 patients who did not get penicillin for throat infections, five had attacks of rheumatic fever. Repeat attacks of rheumatic fever, with its heart-damaging danger, strike on the average 40% to 50% of patients.

Associated with Dr. Massell in the study were: Drs. George P. Sturgis, Richard B. Streeper, Thomas N. Hall, Joseph D. Knobloch and Pliny Norcross.

Science News Letter, July 1, 1950

MEDICINE

Blue-Eyed Persons More Apt to Get Cancer in Sun

➤ WARNING to blue-eyed persons, especially those with blue-eyed parents: Better keep out of the sun because you are more susceptible to cancer caused by exposure to the sun's rays than your brown-eyed friends.

A relation between blue eyes and susceptibility to cancer caused by the sun's rays, based on a study of 100 persons, is reported by Dr. A. Fletcher Hall of the University of Southern California Graduate School of Medicine to a special journal on skin diseases published by the American Medical Association in Chicago.

"Observations suggest," he states, "that the more brown-eyed inheritance a person possesses, the better protected he is from the carcinogenic (cancer-causing) rays of the sun. Blue-eyed children of parents are, in general, the most susceptible, but many of these are capable of tanning without repeated burning and thus acquire a fair degree of immunity."

Science News Letter, July 1, 1950

NCE FIELDS

NEUROLOGY

Music Brings on Epileptic Fits

➤ A CASE of "musicogenic epilepsy" in which the patient's seizures, or fits, were brought on by hearing music was reported by Drs. David Daly and Reginald G. Bickford of Rochester, Minn., at the meeting in Atlantic City, N. J., of the American Neurological Association.

Only music having great emotional significance for the patient, however, would induce the seizures. Five other patients were sensitive to light, and seizures very like the ones the patients usually had could be brought on experimentally by light stimulation.

The patient with "musicogenic epilepsy" had a period of aphasia, or speech loss, following a music-induced seizure.

Science News Letter, July 1, 1950

MEDICINE

High-Pressure Oxygen for Carbon Monoxide Poisoning

➤ HIGH pressure oxygen as treatment for carbon monoxide poisoning is recommended by Drs. Nello Pace, Enrique Strajman and Elaine L. Walker of the University of California in Berkeley, Calif., in a report to the journal, SCIENCE (June 16).

The dangerous gas can be eliminated from the body five times as fast with this method.

The recommendation is based in part on tests with five men and five women who let themselves be exposed to the deadly carbon monoxide gas by breathing it, mixed with air, from a bag for 30 seconds.

The men and women were then seated in a recompression chamber, the ambient pressure was raised to two and a half atmospheres absolute, and they began breathing oxygen from a medical oxygen tank through an A-14 mask. The recompression chamber was one belonging to the Ship Salvage Unit of the San Francisco Naval Shipyard.

The rate of carbon monoxide elimination from the body, the scientists found, is increased about fivefold, from a half-time of over four hours while breathing air to a half-time of about 45 minutes while breathing pure oxygen, corresponding to the fivefold increase in oxygen partial pressure.

Besides the increased speed of carbon monoxide elimination, the high pressure oxygen treatment would also immediately relieve the oxygen deficiency in victims of carbon monoxide poisoning. Blood samples taken from the veins of the men and women in the experiment were consistently bright red in color during the high pressure experiments, in contrast to the darker color of vein blood drawn under other conditions.

Trial of the high pressure oxygen treatment is recommended where suitable pressure chamber facilities are available. There is, the scientists state, "no evident reason" why the high pressure oxygen method cannot be coupled with standard mechanical resuscitator devices, thereby extending its application to cases where breathing has stopped.

The treatment might also, they suggest, be used in other conditions besides carbon monoxide poisoning where the hemoglobin oxygen transport mechanism has been put out of operation.

Science News Letter, July 1, 1950

PHYSICS

Hand-Written Speech Played Back by Machine

➤ A SLIP of the paint-brush can make all the difference between a soft Southern drawl and the pronunciation of a Brooklyn taxi driver when you are drawing speech by hand instead of using the old-fashioned vocal cords.

Even so, when using the pattern playback developed by the Haskins Laboratories of New York entirely artificial hand-drawn speech is highly intelligible, according to Drs. Franklin S. Cooper, Alvin M. Liberman and John. M. Borst of that organization. They spoke at the meeting of the Acoustical Society of America at State College, Pa.

The pattern playback is closely related to the instruments for visible speech, or sound spectrograph, which was developed at the Bell Telephone Laboratories just after the war. The sound spectrograph is a machine that will listen to your voice, and then produce a tape with a recording of the different tones in each of the words of the sentence as you speak it.

The tape comes out marked with broad lines and bands slanting up and down for the different vowels in the words. The pattern play-back will take such a tape, read it and convert the marks back into speech. In fact, it will read any marks and convert them into some kind of noise.

Hand-drawn patterns, in imitation of the real speech spectrograms on a tape, when put through the pattern playback, do actually sound like human speech. The drawn out patterns even can be considerably simplified, and still the playback speech is understandable. Parts of the pattern can be left out, or modified to give unusual effects.

Work of this kind, by Pierre Delattre now at the University of Pennsylvania, showed how the French nasalized vowel sounds are a modification of the ordinary vowel sounds. In some cases, nasalization occurs when the hand drawn tape has a curved instead of a straight sound band.

Science News Letter, July 1, 1950

MEDICINE

Hormone Treatment for Undersized Boys

➤ MALE hormone treatment for undersized, puny boys if their slow development is embarrassing them is advised by Drs. H. Lisser and Gilbert S. Gordan of the University of California School of Medicine in San Francisco.

"If they're old enough to be teased, they're old enough to be treated," sums up their opinion as reported to the Association for the Study of Internal Secretions meeting in San Francisco.

They advise the treatment even in boys who could be expected to mature eventually without treatment, in order to forestall feelings of inferiority.

They reported good results with this treatment in 60 boys. All of them grew taller and their weight, muscular development, strength, vigor and morale increased at the same time. There were no harmful effects from the doses of hormone used except two cases of overdeveloped breasts. In one of these operation was necessary.

Science News Letter, July 1, 1950

GENERAL SCIENCE

AAUW Brain Prize Helps Anatomist Confirm Work

➤ BRAIN work won the $2,500 AAUW award for Dr. Elizabeth C. Crosby, anatomist of the University of Michigan Medical School, and the money will be used for electrical apparatus to give final confirmation on how one region of the brain works.

In accepting the 8th annual achievement award of the American Association of Univesity Women, Dr. Crosby explained that some rather expensive apparatus is needed to clinch some of her results on the brain of primates, including man. She will use her prize money for that purpose.

Science News Letter, July 1, 1950

ENTOMOLOGY

Corn Borer's New Diet: Green Peppers

➤ CANADA'S corn borers, no longer content with Canadian corn, are turning to a Mexican diet. They are showing a damaging liking for green peppers, it is reported in Harrow, Ontario.

A disease known as soft rot, which has become serious in peppers of southern Ontario, has been traced to the larva of the corn borer. When the borers tunnel into the green peppers, they take the soft rot with them.

The resulting loss to some pepper growers, C. D. McKeen of the Dominion Laboratory of Plant Pathology reports, has been extremely heavy in the past year.

Science News Letter, July 1, 1950

ENTOMOLOGY

Fight Flies for Fly-Free World

Germ carriers can be beaten by clean-up, new insecticides. Flyless cities are now possible even though some flies have established a resistance to DDT and other insecticides.

By SAM MATTHEWS

➤ FLY-FREE HALF CENTURY! Will this be a chapter heading in a future historian's look at the United States of 1950-2000?

A museum placard reading "The Last Fly on Earth" will probably never be written. No human would be around to write it.

But right now, at mid-century, Americans have the weapons to write off the last fly in their homes, neighborhoods or entire cities. Over the past three or four summers, all-out anti-fly campaigns have done just that in many U. S. communities.

As 1950's fly-war season opens, these are the weapons: an arsenal of potent insecticides built around DDT, most of them inexpensive and widely available; public awareness of the bacteriological dangers as well as the aesthetic unpleasantness of seeing a platoon of flies march across the sugar bowl or gravy tureen; and most important, the ability to hit flies where they live, by clean-up and elimination of their breeding places.

The common house fly stands indicted by medical authorities as a menace to public health. It carries germs straight from piles of manure or decaying garbage to the food that you eat.

At worst, its passengers are dysentery, typhoid, diarrhea and TB. At best, its annoyance is an insult to the human race.

Flies Begin as Mass of Eggs

The fly begins as one of a mass of about 130 tiny white eggs. The mother, if she has her choice, will pick a pile of fresh horse manure as her maternity ward. But she has no aversion to the well-filled garbage can whose top you forgot to put back on. Refuse in alleys, souring matter on the city dump, or the old-fashioned outdoor privy are other choice lying-in spots.

The eggs hatch in less than a day, producing tiny larvae or maggots. These creamy-white worms gorge themselves on the food at hand. Three days to a week later, grown to half an inch in length, the maggots crawl to the edges of the manure pile.

There they burrow into the soil and turn into brown, barrel-shaped incubators. Inside each one, an adult fly begins to develop. This is what is called the pupal, or resting stage of the insect.

When the weather is warm enough, (anywhere from three days to many weeks later), the adult fly pushes open the end of this case, worms its way to the surface and is off to your dinner table. The female soon mates, and is ready to lay her first clutch of eggs within days.

From the home-owner's point of view, this rapid life-cycle produces hordes of flies in nothing flat. The prospect of ever winning against the winged legions seems remote. But an essentially flyless city is not impossible.

Clean Back Yard

The work can begin in the back yard. The garbage can should be tightly lidded, and kept that way. Cut grass should not be raked into piles and left to decay. You can urge your neighbor to eliminate that pile of manure in his garden, pointing out that it will do wonders worked into the soil, but if it is left in a rotting heap, fly larvae will call it home.

A community-wide prevention campaign can be initiated in this day and age without using dynamite on City Hall. The city fathers have long since realized that a town without flies means votes. You can do your part by urging that dumping grounds be covered with cinders or earth and sprayed with DDT several times during the summer.

Alleys and areaways behind restaurants, markets or slaughter-houses are not proper places for garbage or fermenting rubbish. The municipal health department is responsible for seeing that these places do not become fly-breeding centers.

Insecticide Strikes

To provide a sudden, untimely death to the flies which arrive at your door, the household insecticides come into the picture. There are two general types: the residual sprays or liquids, which leave a death-dealing film on screens, pillars, window sills and other likely landing strips flies may use; and the aerosols, fine mists which hang in the air and knock down airborne squadrons of flies.

You can use a paint brush or a common household spray gun to put down residual insecticide defenses. Spray or paint all likely roosting places, indoors and out. Of particular importance are the window and door screens and other points where flies will try to get into the house.

These coatings will last from several weeks to several months, depending upon their exposure to the weather. They will not knock over flies as if they carried high-voltage electricity. But any fly that so much as steps on a tiny speck of DDT will begin

FROM RUBBISH HEAP TO ADULT STAGE—Fester spots such as this provide a breeding place for the common housefly. Then after a few weeks the adult fly, as shown above, right, emerges full-grown from his pupal shell.

TO SUGAR BOWL—With taste buds on the ends of his legs, the adult fly likes nothing better than to prance in your sugar bowl.

to reel and stagger in 30 to 40 minutes. Shortly afterward, it will be a "good" fly—a very, very dead one.

The aerosols—or space sprays—deal quick and gratifying death, on the other hand. That is because most of them contain pyrethrum, either natural or the newly developed synthetic variety, as well as DDT. The pyrethrum scores an instant knockdown; the DDT (or other insecticides) delivers the killing punch while the fly is unconscious.

Although the amount of DDT in household insecticide sprays is too small to hurt you, your skin may react to the kerosene solvent which many such sprays employ. For that reason it is always a good idea to wash your hands with strong soap after using any insecticide.

DDT-Resistant Flies

You may find yourself fighting flies which do not bat an eye at DDT. DDT-resistant strains have been popping up in the past several years in widespread parts of the country.

But you are far from weaponless. There are other new insecticides developed since the war which are highly recommended for fly control use by entomologists and public health officials. Among these are chlordane, methoxychlor, gamma benzene hexachloride (also called lindane), synthetic pyrethrum and dieldrin.

All but dieldrin are now on the market. The aerosols come in easy-to-operate cans which produce a death-dealing space spray at the touch of a button. Under government regulation, manufacturers must print on the label exactly what compounds an insect spray contains—and how much of it.

For the would-be buyer, there is one cardinal rule: *Read the label on the can! Follow what it says.*

Science News Letter, July 1, 1950

CHEMISTRY

Rare Element Crystals Seen As Anti-Virus Agent

➤ CRYSTALS of the rare element, germanium, might be made into an anti-virus agent for disease-fighting, Prof. Eugene G. Rochow of Harvard University suggested at the American Chemical Society's National Colloid Symposium in St. Louis.

The suggestion is based on recent research on compounds of carbon, hydrogen, oxygen and germanium. The compounds are known as organogermanium oxides. Giant molecules of these compounds, which Prof. Rochow calls "germenones," have the property of accumulating or organizing into crystalline arrangements "strikingly similar to the virus crystals formed by such organisms as tobacco mosaic virus," Prof. Rochow reported.

"The virus structures have the ability to reproduce and grow while the 'germenone' crystals do not," Prof. Rochow said, "but the similarity of structure and size indicates further how indefinite is the line between the properties of living matter and the properties of non-living matter of comparable molecular weight.

"The possibility of having the non-living 'germenone' crystals interfere with the growth of virus crystals, and so inhibit the characteristic functions of the virus, remains to be investigated."

Science News Letter, July 1, 1950

INVENTION

Steering Wheel Cushions Driver in Collision

➤ A TELESCOPING steering column, designed for the much-discussed Tucker automobile, brought patent 2,511,165 to Kenneth E. Lyman of Chicago. Patent rights are assigned to the Tucker Corp., Chicago, Ill.

Parts of the steering wheel column are connected rigidly with one another with regard to rotation, but are designed to slide together like a telescope if pressure is applied to the wheel. A heavy spring keeps the wheel in normal operating position, yet acts as a safety cushion for the driver, should he be thrown forward by sudden impact or deceleration.

Science News Letter, July 1, 1950

IT'S EASIER TO LEARN A LANGUAGE By LINGUAPHONE

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Hints for Writing Science

Telling the public about science and technology has been the work of Science Service since 1921. In those years many scientists, writers, and editors have asked questions that have been answered by the following suggestions, originally compiled about two decades ago.

Don'ts for Would-Be Writers of Science

By the late EDWIN E. SLOSSON
First Director of SCIENCE SERVICE

Don't overestimate the reader's knowledge and don't underestimate the reader's intelligence. He may not know as much as you about this particular thing—let's hope not anyway—but otherwise he may be as bright as you are—let's hope so anyway.

Don't try to tell all you know in 500 words. Leave some over for another time. The clean plate rule does not apply here.

Don't think that because a thing is old to you it is known to the public. Many of your readers are still living in the nineteenth century; some of them in the eighteenth. Anything new to your readers is "news" to them if hung on a timely peg.

Don't leave out the human interest. Your reader is a human being even if you are only a scientist.

Don't forget that your reader is interrupting you every ten lines to ask, "Why?" "What for?" or "Well, what of it?" and if you don't answer his tacit question he will soon stop reading.

Don't think that you can make your topic more attractive by tricking it out with fairy lore or baby talk or irrelevant jokes or extravagant language. Bring out its real and intrinsic interest as forcibly as you can. Set off the red fire if you like, but be sure it lights up the object instead of drawing attention away from it.

Don't say "this discovery is interesting" unless you can prove that it is, and if you can prove it, you don't have to say it.

Don't suppose you must give bibliographical references to all the literature of the subject, but don't fail to give a clue by which the interested reader can get on its trail.

Don't fail to put your best foot forward. Otherwise you may not have a chance to use the other foot. Note the construction of the news story in any first-class paper. It is built up on the same logical system as the symphony or opera overture. The opening paragraph gives in succinct fashion the main point of interest, the gist of the story, just as the first movement of a musical composition expresses the theme or motif.

Don't expect the editor to explain why he objects to your manuscript. He is probably right in his verdict, but if you would make him give a reason for it, he will have to invent one and it would probably be wrong.

Don't back up too far to get a running start. Remember the man who wanted to jump over a hill. He ran a mile to work up momentum and was so tired when he got to the bottom of the hill that he had to sit down and rest. So will your readers. Ninety per cent of the manuscripts that I have handled in 20 years as an editor would have been improved by cutting off the first page or paragraph. Yet authors, like hens, kick on decapitation.

Don't imagine that you must add a pretty but superfluous paragraph at the end, like the coda of a sonata. The most effective close is to quit when you get through.

Don't shoot in the air. Aim at somebody. You may miss him, but you are more likely to hit somebody else than if you aim at nobody. Look out of your window and note the first person coming along the street. Imagine yourself stopping this man or woman on the sidewalk, and, like the Ancient Mariner, holding his or her attention till you have told your tale to the end.

Don't regurgitate undigested morsels. It is a disgusting habit.

Don't refer to notes or books while writing. Read up on the subject as thoroughly as you can, and take as many notes as you need; then put away all your notes and books out of reach and next day or at least an hour later lay clean sheets of paper on a clear desk and write out what you know about it, in your own way. Afterwards, preferably next day, read over your manuscript critically, verify your facts, correct your data, revise your English and add any essential points, but don't expect the reader to be interested in what is so uninteresting to you that you cannot keep it in mind a single hour.

Don't define a hard word by a harder word: Vladivostok is a hard word, but when a press correspondent arrives at Vladivostok he goes right on inland without stopping to explain that "this is a city south of Khabarovsk and east of Tsitsikhar." So, if you want to say "calorie," say it, but don't make it worse by "explaining" it as "the quantity of heat necessary to effect a rise of temperature of one degree Centigrade of a cube of water each dimension of which is one tenth part of the length of a bar of platinum and iridium alloy lying in the observatory of St. Cloud." If you think you must define the calorie say casually something like this, that 100 calories of energy can be derived from three cubes of sugar or from a small pat of butter, or explain that a man needs to expend 100 calories an hour to keep his body running, and 160 calories if he is working hard.

Don't think you must leave out all the technical terms. Use them whenever necessary without apology, and if possible without formal definition. People are not so easily scared by strange words as you may think. They rather like 'em. Kipling is read with delight by old and young, yet his prose and verse are crammed with technical terms. Having exhausted the military, nautical and mechanical vocabularies, he invented a new and unknown nomenclature for his story "With the Night Mail," and didn't stop to define one of the technical terms. In his "Just So" stories for the kiddies he sticks in long names like plums in a pudding. A Kipling dictionary has been published, but even the editor could not run down all the peculiar words Kipling had picked up. But the ordinary reader does not need the dictionary. He gets the meaning from the run of the story, for the story is so written that he will get the meaning as he runs. When the Great War (First World War) broke out everybody had to learn a new language for which there was no dictionary. But the war correspondent wrote without hesitation: "At zero hour the barrage was raised and the poilu and the doughboy sprang over the top, sticking their bayonets into the boche." And the man in the street read it without batting an eye, although the sentence contained half a dozen words not to be found in his vocabulary before. But if this sentence were being written by one of our conscientious scientists, he would word it in this fashion:

"At zero hour—to use the military term for the time set for the beginning of an offensive—the barrage—that is to say the line on which the artillery fire is directed—was raised and the poilu—this is a French slang term for soldier, meaning 'hairy' and corresponding to our 'rough-neck' and the doughboy—this is an American slang term for infantryman derived either from the round buttons worn in the Civil War or the 'dobe' huts inhabited in the Mexican War or the pipe-clayed belts of the Revolutionary War or because the Secretary of War was named Baker—sprang over the top—that is to say, surmounted the parapet of the entrenchments — sticking their bayonets — a weapon invented at Bayonne, France, in 1650—into the boche—a contemptuous term referring to the Germans, probably an abbreviation of *caboche* or *blockhead* originally applied to Alsatians."

Stories That Should Be Handled with Care

By WATSON DAVIS
Director of SCIENCE SERVICE

Stories on this list should, in general, *not* be used, at least until they are thoroughly checked and investigated by several competent specialists in the subject. These are not forbidden stories for some of the impossible things of today may become possible tomorrow, but scientific discoveries rarely come nowadays from accident or inspiration. They are usually the result of systematic research of many investigators.

General

Any "secret" scientific or technical process.

Any process or preparation, where the essential element is not disclosed, bearing a coined name.

Announcement of the sudden achievement of "what scientists have long sought for in vain," and rediscoveries of "lost arts."

Complaints of "a conspiracy of silence" against the inventor or other evidence of a persecution complex.

Sweeping claims of any sort.

"Supernatural" Stuff

Telepathy and mind reading.
Spirit manifestations of any sort.
Long range weather forecasts in general.

Long range weather forecasts based on animal habits.

Astrologists and horoscopes.

End of the world predictions for the near future.

Evil or beneficial influence of the number 13.

Evil or beneficial influence of the number 7.

Evil or beneficial influence of any number.

Stars affecting human events or destinies.

Phrenology.

Numerology.

Predictions based on lines of hand, or shape of nose.

Intelligence or character reading based on size and shape of features, handwriting or hands.

Charms, amulets, lucky coins and other such survivals of savagery.

Rediscoveries of lost prophetic books.

Animals that "think," "read minds," etc.

Medical

Hypnotic "cures."

Hypnotic treatments by non-medical practitioners.

Mental treatments by others than physicians or psychologists.

Universal germ killers.

Any absolute cure of any disease.

Unauthenticated treatments of cancer, tuberculosis, colds and such diseases.

Cancer "cures."

Cures of deafness, blindness or baldness.

Doctors who advertise.

Cures for "male and female weakness."

Drugs for curing obesity and underweight.

Rejuvenation.

Electrical treatments for serious disorders.

Electric belts.

Electronic treatments by the Abrams or other such methods.

Spinal adjustments.

Whiskey as an antidote for snake bite.

Mad stones for snake bite.

"Marking" of children by experiences of mother before birth.

Determining or controlling of sex before birth.

Mineral waters as cures for disease.

Cure of rabies by a stone or by shooting the dog.

Physics and Mechanics

Perpetual motion.

Machines that produce more energy than they use.

Fuelless motors.

Chemicals that greatly increase gasoline mileage.

Fluids that recharge storage batteries.

Methods of burning water or ashes.

Chemicals that make coal burn hotter.

Rediscovery of supposed lost arts, such as hardening of copper.

Death rays.

Engine stopping rays.

Divining rods.

Intuitive methods of discovering water, oil and minerals.

Transmutation of metals.

Animal and Plant World

Creation of life.

Spontaneous generation of life.

Sea serpents.

Seeds that grow after more than 300 years, especially that old chestnut about wheat in mummy cases.

Superhuman intelligence in animals.

Prehistoric and gigantic animals living today.

Gigantic snakes in temperate zones.

"Hearts," "nerves" or other animal-like organs in plants.

Inheritance of acquired characters.

Absolute proof or disproof of evolution.

Hybrids between unlike plants or animals: e. g., goat and pig, or carrot and beet.

Toads or frogs enclosed for many years in stones or rocks.

Animals (e. g., turtle or frog) living in the human stomach after being swallowed.

Living "Missing Links."

Man-eating trees.

Miscellaneous

Discovery of prehistoric men of gigantic or dwarfed size.

Ozone in sea-side, mountain or prairie air; radium water.

Messages from or to Mars or other planets; inhabitants of other planets.

"Moron" as synonym for "sex offender."

People living to extreme ages, as 115 and 120 years.

Skeletons or mummies of "giants" (more than 7 feet tall).

"Squaring" the circle; trisecting the angle.

Moon's influence on weather, crops or people.

Influence of sunspots on animal propagation, death rate, etc.

Children "brighter than Einstein."

Discovery of the secret of the pyramids, sphinx or other ancient monuments.

Discovery and interpretation of ciphers in old books and manuscripts.

Lost continents, such as Atlantis and Mu.

Equinoxial storms.

Earthquakes are necessarily accompanied by volcanic eruptions.

Moundbuilders as a "mysterious civilization." (They were just plain Indians.)

About Writing For Science Service

In reply to inquiries about writing for Science Service, the following information is furnished:

Science Service invites the cooperation of competent writers, particularly those who are scientifically trained and engaged in research work. In general, it does not appoint correspondents on part-time or full salary. It does not appoint representatives other than its regular staff. It does not assign particular geographical territory or scientific fields to its correspondents.

Science Service material must have the approval of the scientific world and it is expected that those who submit material to us will prepare it with the cooperation and approval of the scientist whose work is being reported.

Science Service syndicates news and features to many subscribing newspapers in all parts of the world. The stories carried on our leased coast-to-coast wire and in our other newspaper reports are used in various parts of newspapers—news columns, editorial pages, Sunday feature sections and daily magazine pages. They are also used in magazines, among them the SCIENCE NEWS LETTER, published by Science Service each week. Science Service's field is the whole of science, in the widest sense of the word.

All news stories should have both news angle and science value. In all but exceptional cases, they should be written in the form, style and length customary in the news pages of a daily paper. Tell the news in the first paragraph or sentence. Usually, news stories are not signed by individuals but "By Science Service."

Three to four hundred words is the preferable length for news stories. A thousand words is too long for the average newspaper column. Look at a daily newspaper and note how few stories are longer than half a column.

News stories begin with a date-line showing the place of origin of news or where written. Thus: WASHINGTON. Copy should be typewritten, triple spaced. Put your name and address on your story.

Science Service pays professional and amateur writers whose material proves acceptable.

One cent a word is the minimum rate paid, on acceptance, and more is paid for stories of exceptional value and news interest. It does not pay scientists for coverage of their own researches.

The first consideration in a Science Service story is to tell about or interpret a scientific event. But the news stories must be so well written that large newspapers will use them without rewriting or revision, either in form or language. Tell your story so that those who know nothing about science will understand and wish to read it. Weave in the scientific background that the man in the street does not have. Use simple words. Make your story as graphic as if you were talking about it.

The credit line, "By Science Service," must stand for accuracy of content and comment. Check up facts, figures, names, dates, places, and if you are not an authority on the subject, get your story checked by some one who is. State on the MS. source of information, whether personal interview, letter, magazine, or otherwise. If from a scientific journal, give date and page number. It is necessary that title (Dr., Prof., etc.), complete name and initials, position, and location be given for all persons named. If the person quoted or giving information has had a chance to look it over, so state. (Whenever possible all Science Service stories are checked in this way.)

Science Service does not wish stories taken from second-hand sources, magazines, newspapers, etc. Whenever such sources have to be used, the material must be checked by an authority, or amplified from the original source under competent advice. Attach all the material —technical articles, statements, letters, etc.— used in preparing the story, since such material often helps. Material is submitted to Science Service at the risk of the reader. Prompt decisions are the rule.

Time is the essence of news. Rush in your copy by air mail. If you wire us, be sure it is at press rate, which is less expensive than night letter or any other rate. Timeliness is often more important than literary preparation. Science Service pays for authentic *information* (copies of new reports, etc.) of important science developments. Get the news to us promptly even when you have not time to write it.

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ORNITHOLOGY

NATURE RAMBLINGS

Bald Eagle

➤ NEITHER Ben Franklin nor John Audubon, two of the most noted American scientists, thought much of the choice of the bald eagle as the American national bird.

The bald eagle is a handsome, ferocious-looking bird, with his snow-white head and neck above his dark brown body. His habit of choosing a nest site in the clouds, on an inaccessible crag in the mountains or at the top of a towering tree, lends itself to our concept of the bird as a symbol of power and dignity.

But when we come to know him a bit better, as Audubon did, the American eagle does not seem so attractive after all. He is not the wild, fierce, free-hunting bird which Fourth-of-July orators are wont to make him. More often, he is a robber and a carrion feeder, like the vulture.

He does eat meat, to be sure; but if he has a choice, he will take fish—and he is not always fussy about how he gets it.

A favorite trick of the bald eagle, as described by Audubon and by many naturalists after him, is to circle in the air while an osprey, the well-known fish hawk, works below him. The osprey is a fine large bird that can plummet down into the water, snatch a fish from beneath the surface and fly off with it.

When the eagle sees the osprey rise with a catch, he swoops down from twelve o'clock high, screaming his loudest. The osprey, alarmed by attack, drops his fish and dives for safety. That is just what the eagle wants.

He continues his own dive, not after the osprey but after the dropped fish, catches it in mid-air and bears it off triumphantly. A clever enough stunt, this trait of the eagle's, but not a particularly good sign of noble character. And Audubon would be among the first to point this out.

Benjamin Franklin's opinion of the bald eagle was no higher than that of Audubon. Franklin contended that the national bird of the new republic should be a turkey, if the country must have any bird as its emblem.

The gobbler, he pointed out, is just as exclusively American as the eagle; it is a peaceful and a highly useful bird, particularly at Thanksgiving, rather than being piratical and predatory. And the turkey, although it will fight only when its family is threatened, will then do battle against dismaying odds.

But the advice of Franklin and Audubon was disregarded. The bald eagle was enthroned on our national coat of arms and our coins. July 4 became a time to talk about the great qualities of the fearless bald eagle.

There is no doubt that any eagle inspires the admiriation and respect of one seeing him in his natural habitat. And Audubon, if he were here, would chuckle over silver money he might receive. For there are more than a few coins in circulation now which portray, not the bald eagle, but the golden eagle, which is native to the Old World as well as to America.

Science News Letter, July 1, 1950

ENGINEERING

Industrial TV System

➤ ACTIVITIES in factories can now be viewed by the superintendent without leaving his office desk. Classroom doings in the school can be noted from the principal's office. A new industrial television system is the answer. It is small enough and cheap enough for wide usage.

The new system is a non-broadcasting type. Transmission from workrooms to the central office is by wire. The system is capable of transmitting a signal 500 feet over a coaxial cable closed circuit. In factory rooms or other places to be viewed frequently, a camera is kept in fixed position. The camera is operated and even focused from a master unit in the central office. The picture is shown as in a conventional receiver.

The heart of the new system is a camera about the size of a personal-type 16-millimeter movie camera. The key of the camera is a new pickup tube, called a Vidicon, which is only one inch in diameter and six inches long. This is less than one-tenth the size of the Image Orthicon tube used in TV studio cameras.

This new tube, and the industrial television system made possible by it, is a development of Radio Corporation of America. The possibilities of the system were demonstrated recently in the City Prison of Manhattan, New York. With it, prisoners were observed during work, relaxation and exercise periods The prison scenes were reproduced with clarity and brilliance.

A suitcase-size control box is the only other unit required for operation. This combines the power supply, a small synchronizing generator, a video amplifier strip, scanning deflection equipment, and a seven-inch kinescope monitor in a single housing. The entire system operates on ordinary 110-volt, 60-cycle alternating current, and consumes only about one-third the power used by a household electric toaster.

If desired, home television receivers can be adopted for use as monitors. To do this, an additional tube in the receiver is required, together with accompanying resistors and capacitors. In addition to the applications suggested for the system, many others are possible. Important is the viewing of dangerous operations from a safe distance as, perhaps, where radioactivity is concerned.

Science News Letter, July 1, 1950

OCEANOGRAPHY

Earth Has "Spring Fever"

➤ THE daily rotation of the earth on its axis is not as steady and sure as you might think.

Dr. Walter Munk of the University of California's Scripps Institution of Oceanography says there is a number of things that can slow it down or speed it up.

For example, the earth can get "spring fever." There is just enough shift in weight —due to the rising of the sap and growth of leaves, grass and flowers in the spring of the year—to decrease its speed by .02 milliseconds per day. (A millisecond is 1/1000 of a second.)

Winds and tide can slow the earth down, also. Prevailing westerlies cause a loss of 1.5 milliseconds per day, while ocean currents are responsible for a slow-down of .1 millisecond.

There is some evidence to show that even man's activities on earth—the concentration of buildings in large cities like New York and Los Angeles for example—slightly affect the earth's rotation. Dr. Munk has figured out that if all the automobiles in the United States were driven from Fairbanks, Alaska, to Mexico City at the same time, the earth's rotation would be affected to the extent of .000002 milliseconds per day.

Another curious thing, not yet explained, is that seasonal and man-made variations seem more pronounced in the northern hemisphere than below the equator.

Dr. Munk, an associate professor of geophysics, is making the calculations to determine whether it is possible to use accurate astronomic observations in conjunction with the atomic clock, the world's most accurate timepiece, as a means of studying the circulation of the atmosphere.

Science News Letter, July 1, 1950

• Books of the Week •

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ATLAS OF HUMAN ANATOMY, Vol. I: Osteology, Arthrology, Myology; Vol. II: Splanchnology, Angeiology, Nervous System, Organs of Sense—M. W. Woerdeman—*Blakiston*, Vol. I: Approx. 452 p., illus., $10.00; Vol. II: Approx. 580 p., illus., $10.00 (Set: $18.00). A two-volume set pictorially representing the structure of the bones, joints, muscles, the digestive, respiratory, urogenital, circulatory and nervous systems and sense-organs.

CLINICAL NUTRITION—Norman Jolliffe, F. F. Tisdall and Paul R. Cannon, Eds.—*Hoeber*, 925 p., illus., $12.00. Covers diagnosis of deficiencies, a detailed discussion of individual nutrients, therapy and prevention. Monograph sponsored by the Food and Nutrition Board of the National Research Council.

COBALT: Occurrence in Soils and Forages in Relation to a Nutritional Disorder in Ruminants—A Review of the Literature—Kenneth C. Beeson—*Gov't. Printing Office*, U. S. Dept. of Ag. Inf. Bull. No. 7, 44 p., illus., paper, 15 cents.

DEVELOPMENTS CONCERNING THE PROPERTIES OF CAST STEELS—Charles W. Briggs—*Steel Founders' Society of America*, 19 p., illus., paper, 20 cents.

EXTERNAL MORPHOLOGY OF THE PRIMATE BRAIN—Cornelius J. Connolly—*Thomas*, 378 p., illus., $10.000. A monograph of important cortical developments from lemur to man.

THE GENEALOGY OF GYNAECOLOGY: History of the Development of Gynaecology Throughout the Ages 2000 B.C.—1800 A.D.—James V. Ricci—*Blakiston*, 2nd ed., 494 p., $8.50. A brief history of the contributions to gynecology by the various civilizations such as the Egyptian, the Hindu and Arabian.

GENERAL CLINICAL COUNSELING: In Educational Institutions—Milton E. Hahn and Malcolm S. MacLean—*McGraw-Hill*, 375 p., $3.50. A text for upper division and graduate students stressing basic theories and concepts.

A GEOGRAPHY OF EUROPE—Jean Gottman—*Holt*, 688 p., illus., $5.00. Introductory European geography text emphasizing the cultural, economic and social factors as well as the physical elements of the countries.

HANDBOOK OF PHYSICAL MEDICINE AND REHABILITATION—Council on Physical Medicine and Rehabilitation of the American Medical Association, Compiler—for *American Medical Association by Blakiston*, 573 p., illus., $4.25. A handbook describing the diagnoses and treatments of disease by various methods of physical medicine.

HEALTHY BABIES ARE HAPPY BABIES—Josephine Hemenway Kenyon and Ruth Kenyon Russell—*New American Library*, 237 p., illus., paper, 25 cents. A handbook on the physical care and psychological development of young children.

HIGHWAYS IN OUR NATIONAL LIFE: A Symposium—Jean Labatut and Wheaton J. Lane, Eds.—*Princeton University Press*, 506 p., illus., $7.50. Symposium of 45 essays on such subjects as history, sociology, economics, legislation, design, engineering and operation.

HOW TO PLAN, BUILD AND PAY FOR YOUR OWN HOME: A Primer for Home Builders—Carl Zeigler and others—*Popular Mechanics Press*, 171 p., illus., paper, 60 cents (75 cents in Canada).

THE JAMES RIVER BASIN PAST, PRESENT AND FUTURE—The James River Project Committee—*Virginia Academy of Science*, 843 p., illus., $6.00. Detailed account of this area, with particular attention to the development of biological, earth and applied sciences.

MEASUREMENT AND PREDICTION, Vol. IV—Samuel A. Stouffer and others—*Princeton University Press*, 756 p., illus., $10.00. Sponsored by the research branch of the army and editorially sponsored by the Social Science Research Council, this is the last of the Studies in Social Psychology in World War II series. This study presents the theoretical and empirical analysis of the problems of measurement.

NEW FACTS ON BUSINESS CYCLES—Arthur F. Burns—*National Bureau of Economic Research*, 83 p., illus., paper, free upon request to publisher, 1819 Broadway, New York 23, N. Y. The Bureau's 30th annual report.

PEPTIC ULCER—A. C. Ivy, M. I. Grossman and William H. Bachrach—*Blakiston*, 1144 p., illus., $14.00. A monograph on the diagnosis and treatment of peptic ulcer based on experimental and clinical data.

PRACTICAL INVERTEBRATE ANATOMY—W. S. Bullough—*Macmillan*—463 p., illus., $4.50. Brief descriptions of the structure of more than a hundred invertebrate animals commonly examined or dissected by advanced students of zoology.

THE PREMATURE BABY—V. Mary Crosse—*Blakiston*, 2nd ed., 167 p., illus., $2.75. Discusses problems arising in the care of the infant during and after premature labor.

PRESENTING TECHNICAL PAPERS: Procedures Required by Technical Societies and Technical Sections of Trade Associations—Industrial Publicity Association—*Harry W. Smith*, 42 p., paper, $2.50. How 17 technical societies handle the papers before their meetings, who handles publicity, what restrictions there are on publications and other useful details are included in this survey made by a small but active New York group.

PROBLEMS OF COLLEGIATE SUCCESS OR FAILURE WITH PARTICULAR REFERENCE TO PROFESSIONAL SCHOOLS OF MEDICINE—Archer W. Hurd—*Medical College of Virginia*, 124 p., illus., paper, $2.00. The results of studies made to determine why students fail.

THE STEEL CASTINGS INDUSTRY—*Steel Founders' Society of America*, 34 p., illus., paper, 25 cents.

UAXACTUN, GUATEMALA: EXCAVATIONS OF 1931-1937—A. Ledyard Smith—*Carnegie Institution of Washington*, Publ. 588, 108 p., illus., paper, $9.00 (Cloth: $9.75). A monograph discussing the results of these excavations. Many valuable illustrations.

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⚙ *POCKET MICROSCOPE, fountainpen size, is particularly suitable for students doing field studies during the summer months. Supplied in 20 power and 40 power, it has four lenses in an aluminum tube and in use its lower end rests against the object being examined.*

Science News Letter, July 1, 1950

⚙ *WOOD STUDY kit, packed in a small box, contains 54 specimens of American wood and wood products, a knife, 10-power hand lens and an illustrated manual. It is designed to make wood identification and general knowledge of wood easy, instructive and entertaining.*

Science News Letter, July 1, 1950

⚙ *BACK-UP LIGHTS for the automobile, an aid to turning around in the dark where backing is involved, come in a kit with everything needed for home installation, including two lamps, clamps, wiring and an automatic switch. Lights turn on automatically when the car is put in reverse gear.*

Science News Letter, July 1, 1950

⚙ *VINYLITE CURTAINS for the windows are made with lacy patterns, as shown in the picture, are delicate in appearance, strong and long-lasting. These plastic curtains require no laundering, stretching or ironing because they can be wiped clean with a damp cloth.*

Science News Letter, July 1, 1950

⚙ *PICNIC COOKER, suitable also for "bachelor" use, consists of two aluminum pans that fit tightly together, one as a cover, with heat being supplied from a solid fuel that comes with the stove. Replacement fuel is available. Cooker will fit in a car's glove compartment.*

Science News Letter, July 1, 1950

⚙ *DEHYDRATED SOUP, prepared from peas for Army use, requires no cooking but is made ready to eat merely by pouring it into hot water, therefore can be easily prepared by individual soldiers separated from their commands. Its flavor, consistency and texture are satisfactory.*

Science News Letter, July 1, 1950

⚙ *TABLE TOP, made of a rock-hard substance fused into steel, is not damaged by hot pans, skillets, electric irons or even burning cigarettes. It can be scoured with kitchen powders and abrasives and absorbs no water. Edges are sealed against moisture with stainless steel trim.*

Science News Letter, July 1, 1950

⚙ *UTILITY TRAY that may be used on the dashboard of an automobile to hold cigarettes, coins and lipsticks, is held in place by a permanent magnet built into it. No screws, bolts or suction cups are needed; the magnet holds it firmly on any steel surface.*

Science News Letter, July 1, 1950

Do You Know?

Spain produces about half the world's *olive oil*.

Snappers are the largest fresh-water turtles in the United States.

A machine used by chemists to determine the freshness of *bread* does so by squeezing it.

The *temperature* of the core of the sun is said to be around 20,000,000 degrees Fahrenheit.

Soybeans are not sown too early in the spring because the plants are sensitive to low temperatures.

There are said to be some 6,000 different kinds of *insect pests* which take a tremendous annual toll from the food supply of the world.

Sea levels along an extended coast may vary at different points because of winds, atmospheric pressures, saltiness of the water, oceanic currents and other factors.

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